IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of	)
	)
KASAKO	)
	) Art Unit 2188
Application Number: 10/765,128	)
	)
Filed: January 28, 2004	)
	)
For: DATA PROCESSING SYSTEM HAVING	)
A PLURALITY OF STORAGE SYSTEMS	)
	)
Attorney Docket No. WILL.0001	)

Honorable Assistant Commissioner
for Patents
Washington, D.C. 20231

COVER LETTER

Sir:

[x]   The fee for submission of claims is calculated as shown below:

FOR	TOTAL WITH NEW CLAIMS ADDED	TOTAL CURRENTLY ON FILE	CLAIMS PAID	RATE	CALCULATION
Total Claims	10	10	(Over 20)	x $50	0
Independent Claims	1	2	(Over 3)	x $200	0
MULTIPLE DEPENDENT CLAIM(S)				+ $360	0
REDUCTION FOR FILING BY SMALL ENTITY (note 37 C.F.R. §§ 1.9, 1.27, 1.28). IF APPLICABLE, VERIFIED STATEMENT MUST BE ATTACHED				x ½	
				TOTAL	0.00

In addition, the below-identified communications are submitted in the above-captioned application or proceeding:

[x] Preliminary Amendment
       (with Claim Amendments)
[ ] Substitute Specification
[ ] Assignment
[x] Statements & Pre-exam search report with
       References

[ ] Terminal Disclaimer
[ ] Letter to Draftsperson
[x] Information Disclosure Statement
[x] Petition to Make Special under 37 CFR
   §1.102(d) for Accelerated Examination

[   ]   Please charge my **Deposit Account Number** _____ in the amount of _____ to cover the fees for _____. A duplicate copy of this paper is enclosed.

[x]   A check in the amount of **$130.00** to cover the petition fee is enclosed.

[x]   The Commissioner is hereby authorized to charge any additional fees associated with this communication, or credit any overpayment to **Deposit Account Number 08-1480**.

<div align="center">Respectfully submitted,</div>

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January 26, 2005
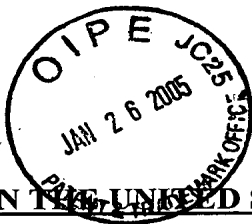
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<u>**PETITION TO MAKE SPECIAL UNDER 37 C.F.R. § 1.102(d)**</u>

FOR ACCELERATED EXAMINATION
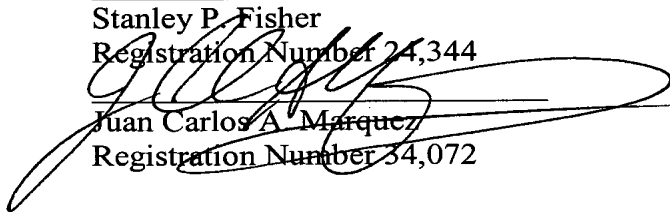
Sir:

Pursuant to 37 C.F.R. § 1.102(d), Applicant respectively requests the application to be examined on the merits in conjunction with the pre-examination search results, the detailed discussion of the relevance of the results and amendments as filed concurrently.

Substantive consideration of the claims is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and telephone number indicated below.

Respectfully submitted,

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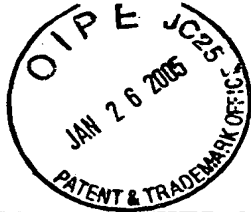
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STATEMENTS & PRE-EXAMINATION SEARCH REPORT
SUPPLEMENTAL TO
THE PETITION TO MAKE SPECIAL

Sir:

Pursuant to 37 C.F.R. §§ 1.102 and MPEP 708.02 VIII, Applicant hereby submits that (1) all claims of record are directed to a single invention, or if the Office determines that all the claims presented are not obviously directed to a single invention, will make an election without traverse as a prerequisite to the grant of special status; (2) a pre-examination search has been conducted according to the following field of search; (3) copies of each reference deemed most closely related to the subject matter encompassed by the claims are enclosed; and (4) a detailed discussion of the references pointing out how the claimed subject matter is patentable over the references is also enclosed herewith.

FIELD OF THE SEARCH

Class	Subclasses	Description
707/		DATA PROCESSING: DATABASE AND FILE MANAGEMENT OR DATA STRUCTURES
	200	FILE OR DATABASE MAINTENANCE
	201	. Coherency (e.g., same view to multiple users)

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The search was directed towards a data processing (e.g., transfer/copying) system having a plurality of storage systems. In particular, the search was directed to a first storage system communicably connected to a host unit and a second and third storage system communicably connected to the first storage system. To rapidly and effectively transfer data between the plurality of storage systems and not affect the operation of the host computer of the plurality of storage systems, journals of the data written into the first storage area are used. Once a journal is written in the first storage system, the journal is transmitted in response to the request of the second and third storage system. The second and third control unit writes the journal into the journal storage area, produces a copy of the data present in the first storage area based on the journal, and writes the copy into the respective data storage area. The first control unit deletes the journal once both the second and third storage systems have read the present journal.

LIST OF RELEVANT REFERENCES

The search revealed the following U.S. patents, which are listed for convenience:

U.S. Patent No.	Inventor
5,889,935	**Ofek et al.**
6,148,383	**Micka et al.**
6,336,173 B1	**Day, III et al.**
6,484,187 B1	**Kern et al.**
6,745,303 B2	**Watanabe**
6,779,003 B1	**Midgley et al.**

U.S. Patent Application Publication No.	Inventor
2004/0139128 A1	**Becker et al.**

Discussion of References:

US. Pat. No. 5,889,935 to **Ofek** et al. is assigned to EMC Corporation and entitled "Disaster Control Features for Remote Data Mirroring." **Ofek** copies data from a first site to a secondary data storage system 46 which is located geographically removed from the first site (col. 7, lines 3-4). At least one of the primary and secondary data storage system controllers 16, 44 coordinates the copying of primary data to the secondary data storage system 46 and maintains a list of primary data which is to be copied. The remote data copying is completely independent and transparent to the host computer system 12 and is external from any influence of the primary host A (col. 8, lines 25-28; Fig. 1). However, in **Ofek,** only the primary host computer, but not any secondary data storage system 46, requests writing of data to a primary data storage device (col. 2, lines 58-60). As such, **Ofek's** first control unit does NOT transmit "said journal present in said first journal storage area to each of said second and third storage systems in response to a request from each of said second and third storage systems" as now recited in claim 1. In addition, it is **Ofek's** secondary storage system, rather than its primary storage system, detects/acknowledges that data is safely stored in both the primary and secondary data storage system, then the primary data storage system acknowledges to the primary host computer that the data is synchronized (col. 8, lines 50-55). As such, **Ofek's** first control unit of the first storage system does NOT detect "as to whether or not said journal present in said first journal storage area has been

read by said second and third storage systems" as now recited in claim 1. **Ofek's** first control unit of the first storage system further fails to "delete said journal present in said first journal storage area after the journal has been read by both said second and third storage systems" as now recited in claim 1.

US. Pat. No. 6,148,383 to **Micka** et al. is assigned to International Business Machines Corporation and entitled "Storage System Employing Universal Timer for Peer-to-Peer Asynchronous Maintenance of Consistent Mirrored Storage." **Micka's** secondary sub-site receives updates from its counterpart primary storage sub-site and stores the updates to a journal of a secondary sub-site storage therein. Each primary storage controller makes an entry for the data record in its respective primary journal, which may comprise a pointer or other identification of the region where the data record is stored or of the data records themselves (col. 8, lines 27-34). If step 412 finds that the secondary controller has properly acknowledged the primary's confirmation message, the primary controller releases its journal entry (col. 9, lines 34-40). **Micka's** secondary sub-site only requests its counterpart primary sub-site to **re-transmit** the updates not present if all updates identified by the confirmation message are not present in the secondary journal (claim 6), but not to initiate/request the counterpart primary sub-site to <u>transmit</u> the updates for the first time. As such, **Micka's** first control unit does NOT transmit "said journal present in said first journal storage area to each of said second and third storage systems in response to <u>a request from each of said second and third storage systems at an independently scheduled journal read timing</u>" as now recited in claim 1. Moreover, **Micka's** primary controller only sends its counterpart secondary controller a confirmation message after sending all updates (Abstract), but does not detect "as to whether or not said journal present in said first journal storage area has been read by said second and third storage systems" as now recited in claim 1.

US. Pat. No. 6,484,187 B1 to **Kern** et al. is assigned to International Business Machines Corporation and entitled "Coordinating Remote Copy Status Changes Across Multiple Logical Sessions to Maintain Consistency." **Kern** has a primary direct access storage device (DASD) and a secondary DASD which shadows the data on the primary DASD (col. 1, lines 40-41). Primary control unit 104 initially writes updates to sidefile 124 in the cache 110 and the system data mover 130 and then retrieves data updates from sidefile 124 and writes them to journal 126 (Fig. 1A). The journal data sets for a primary/secondary control unit pair may reside on any device (col. 5, lines 33-51). After updates are entered into

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a journal and included within a consistency group, updates within a consistency group are applied to the secondary volumes (col. 6, lines 40-51). However, in **Kern,** only the primary host computer, but not any secondary data storage system 46, requests writing of data to a primary data storage device (e.g., "a command request from a host" in claim 1; "a command request from a "host initiator."" col. 9, line 19). As such, **Kern's** primary storage system does NOT transmit "said journal present in said first journal storage area to each of said second and third storage systems in response to <u>a request from each of said second and third storage systems at an independently scheduled journal read timing</u>" as now recited in claim 1. In addition, **Kern's** primary storage system simply does NOT "detect as to whether or not said journal present in said first journal storage area has been read by said second and third storage systems" or "delete said journal present in said first journal storage area after the journal has been read by both said second and third storage systems" as now recited in claim 1.

US. Pat. No. 6,745,303 B2 to **Watanabe** is assigned to Hitachi, Ltd. and entitled "Data Synchronization of Multiple Remote Storage." **Watanabe's** data processing system 10 (Fig. 2) includes a host processor 101, a local site 12, and a number of remote sites 14 communicatively interconnected by a data-communicating network 16 (col. 4, lines 16-22). When the primary disk controller 104 receives a write request (from the host 101), which modifies the data on the storage media 142, a message will be created and placed on a remote copy queue. I/O read and write requests typically include command entry and accompanying or following data and once processed, the command entry is moved from the working queue 110 to the roll back queue 111 (col. 5, line 8- col. 6, line 7). However, **Watanabe's** secondary data storage system does not initiate/request writing of data to a primary data storage device. As such, **Watanabe's** primary storage system does NOT transmit "said journal present in said first journal storage area to each of said second and third storage systems in response to <u>a request from each of said second and third storage systems at an independently scheduled journal read timing</u>" as now recited in claim 1. In addition, **Watanabe's** primary storage system simply does NOT "detect as to whether or not said journal present in said first journal storage area has been read by said second and third storage systems" or "delete said journal present in said first journal storage area after the journal has been read by both said second and third storage systems" as now recited in claim 1. At most, "*when the roll back queue becomes full, or a flush command is received*

(described below) the command entry will then be moved to the intermediate queue 112 (col. 9, lines 23-29)".

US. Pat. No. 6,779,003 B1 to **Midgley** et al. is assigned to LiveVault Corporation and entitled "Systems and Methods for Backing Up Data Files." **Midgley's** data backup system has a agent process 30 which creates a record of the changes made to a particular file and stores that record within a journal file that keeps track of the different changes made to a source file. If the journal file contains information, the dynamic replication process can transfer the journal file to the backup server 12, where the changes are written into the corresponding target data file so that the latest backup copy matches with the current source data files (col. 8, lines 15-23; col. 14, lines 11-20). However, **Midgley's** secondary data storage system does not initiate/request writing of data to a primary data storage device. As such, **Midgley's** primary storage system does NOT transmit "said journal present in said first journal storage area to each of said second and third storage systems in response to a request from each of said second and third storage systems at an independently scheduled journal read timing" as now recited in claim 1. In addition, **Midgley's** primary storage system simply does NOT "detect as to whether or not said journal present in said first journal storage area has been read by said second and third storage systems" or "delete said journal present in said first journal storage area after the journal has been read by both said second and third storage systems" as now recited in claim 1.

US. Pat. App. Pub. No. 2004/0139128 A1 of **Becker** et al. is entitled "System and Method for Backing Up a Computer System." **Becker's** computer system includes a primary computer system 300 and a backup storage system 340 (Fig. 3), where data writes are captured by the intercept agent and stored in a logical disk volume referred to as an After Image Log File Container (AILFC). The data writes are captured in a transparent manner so that the application of primary computer system 100 is not aware of the intercept process (paragraphs 32, 34, and 42). Backup agent 354 applies each data write of AILFC 362 to the replicated image 356, bringing replicated image 356 up to date with the production image 326 on the primary computer system. When the data writes have been recorded, backup agent 354 sends a communication to the log creation agent 320 of the completion of the date replication (paragraphs 85 and 88). Since **Becker's** primary computer system 100 is simply unaware of the intercept process, it does NOT "detect as to whether or not said journal present in said first journal storage area has been read by said second and third storage

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systems" or "delete said journal present in said first journal storage area after the journal has been read by both said second and third storage systems" as now recited in claim 1.

US. Pat. No. 6,336,173 to **Day, III et al.** is assigned to International Business Machines Corporation and entitled "Storing and Tracking Multiple Copies of Data in Data Storage Libraries." **Day** provides the background of the technology of maintaining and tracking synchronism between multiple copies of identifiable data volumes between hosts and a plurality of data storage libraries transparent to the host (Abstract). **Day's** primary storage system does NOT transmit "said journal present in said first journal storage area to each of said second and third storage systems in response to <u>a request from each of said second and third storage systems at an independently scheduled journal read timing</u>" as now recited in claim 1. In addition, **Day's** primary storage system does NOT "detect as to whether or not said journal present in said first journal storage area has been read by said second and third storage systems" or "delete said journal present in said first journal storage area after the journal has been read by both said second and third storage systems" as now recited in claim 1.

CONCLUSION

Based on the results of the comprehensive prior art search as discussed above, Applicants contend that the position calculation method as now recited in independent claim 1, especially the features of a primary storage system "transmitting said journal present in said first journal storage area to each of said second and third storage systems in response to a request from each of said second and third storage systems at an independently scheduled journal read timing," "detecting as to whether or not said journal present in said first journal storage area has been read by said second and third storage systems," and "deleting said journal present in said first journal storage area after the journal has been read by both said second and third storage systems" are patentably distinct from the cited prior art references.

In particular, as now recited in the claim 1, the data processing system of the invention (e.g., Fig. 25), comprises: a first storage system 100A communicably connected to a host unit 180; and a second storage system 100B and a third storage system 100C each communicably connected to said first storage system 100A. (1) The first storage system 100A comprises: a first data storage area DATA1 for storing data transmitted from the host unit 180; a first journal storage area JNL1 for storing a journal used for producing a copy of data stored in said

first storage area DATA1; and a first control unit which writes the data transmitted from said host unit 180 into said first data storage area DATA1, writes the journal of the data written into said first data storage area DATA1 into said first journal storage area JNL1, and transmits said journal present in said first journal storage area JNL1 to each of said second and third storage systems 100B, 100C in response to a request from each of said second and third storage systems 100B, 100C. (2) The second storage system 100B comprises: a second data storage area COPY1 for storing a copy of the data present in said first data storage area DATA1; a second journal storage area JNL2 for storing said journal; and a second control unit which reads said journal from said first storage system 100A at an independently scheduled journal read timing, writes the read-out journal into said second journal storage area JNL2, produces a copy of the data present in said first data storage area DATA1 based on said journal present in said second journal storage area JNL2 at an independently scheduled restore timing, and writes the copy into said second data storage area COPY1. (3) The third storage system 100C comprises: a third data storage area COPY3 for storing a copy of the data present in said first data storage area DATA1; a third journal storage area JNL3 for storing said journal; and a third control unit which reads said journal from said first storage system 100A at an independently scheduled journal read timing, writes the read-out journal into said third journal storage area JNL3, produces a copy of the data present in said first data storage area DATA1 based on said journal present in said third journal storage area JNL3 at an independently scheduled restore timing, and writes the copy into said third data storage area COPY3. The first control unit of said first storage system 100A detects as to whether or not said journal present in said first journal storage area DATA1 has been read by said second and third storage systems 100B, 100C, holds said journal present in said first journal storage area JNL1 till the journal is read by both said second and third storage systems 100B, 100C, and then deletes said journal present in said first journal storage area JNL1 after the journal has been read by both said second and third storage systems 100B, 100C.
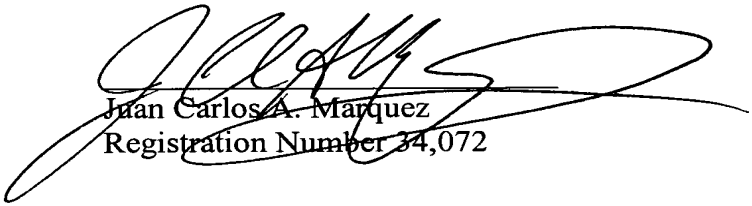
In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references, Applicant respectfully contends that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable consideration of this application is respectfully solicited. Should there be

any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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